codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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TO: - Codex Contact Points
- Interested International Organizations

FROM: Secretary, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy.

SUBJECT: **REQUEST FOR COMMENTS ON THE PROPOSED DRAFT CODEX GENERAL STANDARD FOR FRUIT JUICES AND NECTARS**

DEADLINE: **1 May 2000**

COMMENTS:

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BACKGROUND

1. The 23rd Session of the Codex Alimentarius Commission confirmed[1] the abolition of the Joint UNECE/Codex Group of Experts on the Standardization of Fruit Juices. In accordance with its authority contained in Rule IX.1(b)(i), the Commission agreed to establish an *ad hoc* Intergovernmental Codex Task Force on Fruit Juices under specific Terms of Reference.[2] It agreed to designate the Government of Brazil to be responsible for appointing the Chairperson of the Task Force in compliance with Rule IX.10 of its Rules of Procedure. It was noted that the establishment of such Task Forces would lead to a more flexible structure to handle specific issues for a time-limited period under closely defined terms of reference, but functioning in the same manner as established Codex Committees.

2. The International Federation of Fruit Juice Producers agreed to undertake the work of up-dating the individual Codex standards for fruit juices and nectars in order to prepare a ***Proposed Draft Codex General Standard for Fruit Juices and Nectars***, for circulation and comments prior to the first session of the Task Force.

3. Governments and interested international organizations are invited to comment at Step 3 on the attached ***Proposed Draft Codex General Standard for Fruit Juices and Nectars*** as directed above.

1 ALINORM 99/37, para. 219 and Appendix VI (page 108).
2 ALINORM 99/37, para. 221.

PROPOSED DRAFT CODEX GENERAL STANDARD FOR FRUIT JUICES AND NECTARS
(at Step 3)

1. SCOPE

This standard applies to all fruit juice and fruit nectars as defined in Section 2.1 below.

2. DESCRIPTION

2.1 PRODUCT DEFINITION

2.1.1 Fruit Juice

Fruit juice is the unfermented but fermentable liquid, obtained:

(a) by mechanical extraction processes for single strength juices not from concentrate,
(b) by physical processes for all other juice forms.

The juice is obtained from the edible part of sound, appropriately mature and fresh fruit or fruit preserved by physical means and/or by treatment applied in accordance with the provisions of the Codex Alimentarius Commission. The juice may have been concentrated and later reconstituted with potable water. That meets the criteria described in Section 3.1.1 (a)(iii).

It may be cloudy or clear and must have the essential characteristics typical of the juice of the fruit from which it comes. It is prepared only by suitable physical processes.

Fruit juice may be obtained from one or more kinds of fruits mixed together and may have added aromatic substances, volatile flavour components, pulp and cells, all of which must be recovered from the same kind of fruit and obtained by physical means.

2.1.2 Concentrated Fruit Juice

Concentrated fruit juice is the product that complies with the definition given in Section 2.1.1 above, except water, in any amount, has been physically removed from such juice.

2.1.3 Nectar

Nectar is the unfermented but fermentable product, may be obtained by adding water and/or sugars as defined in the Codex Standard for Sugars (CX-STAN 212-1999) and/or other carbohydrate sweeteners as described in Section 4.5, to products defined in Sections 2.1.1 and 2.1.2, or to fruit purée or concentrated fruit purée or to a mixture of those products.

That product moreover must meet the requirements defined in Section 3.1.1(c).

2.1.4 Fruit Purée

Fruit purée is the unfermented but fermentable product obtained by sieving the edible part of the whole or peeled fruit without removing the juice. The fruit must be sound, appropriately mature and fresh fruit or preserved by physical means or by treatment applied in accordance with the provisions of the Codex Alimentarius Commission. Concentrated fruit purée may be obtained by the physical removal of water of the fruit purée.

2.2 SPECIES

The species indicated as the botanical name in Section 3.1.1(b) shall be used in the preparation of juices and nectars bearing the food name for the applicable fruit. For fruits not included in Section 3.1.1(b), the correct botanical or common name shall apply.

2.3 EXTRACTION PROCESSES

For concentrated fruit juice, suitable physical processes and/or combined with concomitant water diffusion of fruit cells and/or pomace may be used provided that the water-extracted juice is added in-line to the primary juice prior to concentration.

The water which is used for such a process must be the water from the fruit juice concentration process.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 COMPOSITION

3.1.1 Basic Ingredients

(a) Soluble Solids as follows:

i. For fruit juices not from concentrate offered for consumption as such, the soluble solids content of the single strength juice shall not be modified and must be in accordance with the minimum Brix level established in Section 3.1.1(b).
ii. The preparation of fruit juice offered for direct consumption that requires reconstitution of condensed or concentrated juices must be in accordance with the minimum Brix level established in Section 3.1.1 (b), exclusive of the solids of any added optional ingredients and additives. If there is no Brix level specified, in the table, minimum Brix shall be calculated on the basis of the soluble solids content of the single strength, unconcentrated juice used to produce such concentrated juice.
iii. For reconstituted juice from concentrate, potable water used in reconstitution shall, at a minimum, meet *Guidelines for Drinking Water Quality of the World Health Organization* (Volumes 1 and 2, 2nd Edition) with nitrate levels not to exceed 25 mg/l and sodium levels not to exceed 50 mg/l.

(b) Minimum Brix level for reconstituted juice from concentrate and single strength juice not from concentrate.

Fruit	Botanical Name	Brix Level Reconstituted juice from concentrate	Brix Level Single strength juice not from concentrate
Apple	*Pyrus Malus*	11.2	10.2
Apricot	*Prunus armeniaca L.*	11.2	10.2
Aronia / Chokeberry	Aronia melanocarpa *(Michx.) Ell.*	No data currently available	No data currently available
Azerole	*Malpighia punicifolia L.*	6.5	6.0
Banana	*Musca species* (plantians excluded)	21	20.0
Bilberry/Blueberry	*Vaccinium myrtillus L.* *Vaccinium corymbosum L.* *Vaccinium angustifolium*	10.0	8.5
Blackberry	*Rubus Fruitcosus L.*	8.8	8.0
Blackcurrant	*Ribes nigrum L.*	11.0	10.5
Boysenberry	Rubus loganobaccus *L.H. Bailey*	8.0	7.0
Buckthornberry = Sallow thorn		5.8	No data currently available
Carambola	Averrhoa carambola	7.8	No data currently available
Casaba melon	Cucumis melo var. Inodorus	7.5	No data currently available
Cashew Fruit	*Anacardium occidentale L.*	11.5	10.5
Cloudberry	Rubus chamaemorus L.	9.0	8.0
Coconut	Cocos nucifera L.	No data currently available	No data currently available

Fruit	Botanical Name	Brix Level Reconstituted juice from concentrate	Brix Level Single strength juice not from concentrate
Cranberry	*Vaccinium macrocarpon Ait.; Vaccinium oxycoccos L.*	7.5	7.0
Crowberry	Empetrum nigrum L.	6.0	5.5
Date	Phoenix dactylifera L.	18.5	No data currently available
Dew berry	Rubus hispidus *of North America &* R. caesius *of Europe*	10.0	No data currently available
Elderberry	*Sambucus nigra L. Sambucus canandensis*	10.0	9.0
Fig	Ficus carica	18.2	No data currently available
Gooseberry	*Ribes uva-crispi L.*	7.0	6.0
Grape	*Vitis Vinifera or hybirds thereof; Vitis Labrusca or hybrids thereof*	15.9	13.5
Grapefruit	*Citrus Paradisi* Macfayden	10.0	9.5
Guava	*Psidium guajava*	9.5	8.5
Honey dew melon	(Cucumis melo)	9.6	No data currently available
Kiwi	Actinidia chinensis *J.E. Planch*	11.5	10.5
Kumquat	Fortunella sp.	No data currently available	No data currently available
Lemon	*Citrus limon (L.)* Burm.f.)	8.0	7.0
Lime	Citrus aurantifolia *Swingle*	8.0	7.0
Lingonberry	Vaccinium vitis-idaea L.	10.0	9.0
Loganberry	Rubus ursinus *var*. loganobaccus	10.0	No data currently available
Lulo	*Solanum quitoenes L.*	No data currently available	No data currently available
Litchi	*Litchi chinensis* Sonn.	12.0	11.2
Mandarin/Tangerine	Citrus reticulata	11.2	10.5
Mango	*Mangifera indica*	13.0	14.0
Melon	Cucumis melo L.	8.0	7.5
Mulberry	Morus spec.	No data currently available	No data currently available
Nectarine	Prunus persica	10.0	No data currently available
Orange	*Citrus sinenis*	11.2	10.0
Papaya	*Carica papaya L.*	9.5	9.0
Passion fruit	*Passiflora edulis* and *Passiflora edulis forma flavicarpa*	13.5	12.4
Peach	*Prunus persica*	10.0	9.0
Pear	*Pyrus communis L. ;*	11.9	11.0
Persimmon	Diospyros kaki L.	No data currently available	No data currently available
Pineapple	*Ananas comosus L.* Merrill = *Ananas sativus L.* Lindl.	12.8	11.2
Plum	*Prunus domestica L.*	11.2	10.0
Pomegranate	*Punica granatum*	12.0	11.2
Prune	Prunus domestica	18.5	No data currently available
Quetsche	*Prunus domestica L.*	11.2	10.0
Quince	Cydonia oblonga	11.2	10.0

Fruit	Botanical Name	Brix Level Reconstituted juice from concentrate	Brix Level Single strength juice not from concentrate
Raspberry	*Rubus idaeus*	7.0	6.3
Red currant	*Ribes rubrum L.*	10.0	9.0
Rhubarb	Rheum, R. rhubarbarum	5.7	No data currently available
Rose hip	*Rosa sp.*	9.0	8.0
Rowanberry	*Sorbus aucuparia L.*	11.2	10.0
Sallow-thron berry	*Hippphae rhamnoides L.*	5.8	5.0
Sloe	*Prunus spinosa L.*	5.8	5.0
Sour cherry	*Prunus cerasus*	13.5	12.4
Soursop	*Annona muricata L.*	14.5	13.5
Stonesbaer	Prunus cerasus cv. *Stevnsbaer*	17.3	14.7
Strawberry	*Fragaria ananassa*	7.0	6.3
Sugar apple	*Annona squamosa L.*	14.5	13.5
Sweet cherry	*Prunus avium*	20.0	No data currently available
Tomato	*Lycopersicum esculentum* L.	5.0	4.2
Umbu	Spondias tuberosa anuda	9.0	8.0
Water melon	Citrullus lanatus L.	7.8	7.5
White currant	*Ribes rubrum L.*	10.0	9.0

(c) **Special Provisions relating to Fruit Nectars**

Fruit nectars made from	Minimum juice and/or purée content (% m/m)
Apricot	35
Bilberry	40
Blackberry	30
Blackcurrant	30
Blackcurrant (non pulpy)	30
Cloudberry	30
Cranberry	30
Elderberry	50
Goosberry	30
Grapefruit	50
Guava	25
Mandarine	50
Mango (pulpy)	30
Orange	50
Peach	40
Peer	40
Raspberry	40
Redcurrant	30
Rose hip	40
Rowanberry	30
Sea Buckthorn	25
Strawberry	40
Tangerine	50
Whitecurrant	30
Whortleberry	30
Other : high acidity, high pulp content, or strong flavour	25
Other : low acidity, low pulp content, or low/medium flavour	50

3.1.2 Other permitted ingredients subject to ingredient labelling requirements

(a) Sugars with less than 2% moisture (as defined in the Codex Standard for Sugars CX-STAN 212-1999): sucrose, dextrose monohydrate, dextrose anhydrous, glucose, fructose may be added to all juice products defined in Section 2.1.
(b) Syrups (as defined by Codex Standard for Sugars CX-STAN 212-1999): glucose syrup, liquid sucrose, invert sugar solution, invert sugar syrup, fructose syrup, isoglucose, high fructose syrup, sugar derived from fruits and honey may be added only to nectars as defined in Section 2.1.3, concentrated juices as defined and juice from concentrate.
(c) Lemon juice or lime juice, or both, may be added: up to 3-g/l anhydrous citric acid (50 meq) for acidification purposes to unsweetened juices as defined in Sections 2.1.1 and 2.1.2. Lemon juice or lime juice, or both, may be added : up to 5 -g/l anhydrous citric acid to nectars as defined in Section 2.1.3
(d) The addition of both sugars and acidifying agents (defined in subparagraph (b) and Section 4 respectively) to the same fruit juice is prohibited.
(e) The juice from reticulata and citrus hybrids with reticulata may be added to orange juice in an amount not to exceed 10% by weight of total soluble solids.
(f) Salt and spices may be added to tomato juice.

3.2 QUALITY CRITERIA

The juices and nectars shall have the characteristic colour, aroma and flavour of juice from the variety of fruit from which it is made. Natural fruit juice components may be restored to juice of the same type of fruit from which such natural volatile fruit juice components have been removed.

4 FOOD ADDITIVES

Function		Maximum Level
4.1	**Antioxidants**	
300	Ascorbic acid	Limited by GMP
220	Sulphur dioxide (lemon, lime and grape must only)	350 mg/l
4.2	**Acidity Regulators**	
300	Citric acid	2 g/l
330	Citric acid (for nectars)	5 g/l
296	Malic acid (for nectars)	Limited by GMP
336	Tartric acid (for nectars)	Limited by GMP
4.3	**Carbonating Agents**	
290	Carbon dioxide	Limited by GMP
4.4	**Stabilizers**	
440	Pectins	< 3g/l
4.5	**Sweeteners** (for Nectars)	
950	Acesulfarme K	< 350 mg
951	Aspartame	< 600 mg
952	Cyclamic acid and salts	<400 mg/l
954	Saccharine and salts	< 80 mg/l
955	Sucralose	< 250 mg/l
954	Neohesperidine	< 30 mg/l
4.6	Preservatives can be added only in accordance with national legislation.	

5. CONTAMINANTS

The products covered by the provisions of this standard shall comply with those maximum limits established by the Codex Alimentarius Commission.

In particular, the following limits will apply:

		Maximum Level (mg/kg)
5.1	Arsenic (As)	0.2 mg/kg
5.2	Lead (Pb)	0.1 mg/kg
5.3	Tin (Sn)	200 mg/kg
5.4	Copper (Cu)	5 mg/kg
5.5	Zinc (Zn)	5 mg/kg
5.6	Iron (Fe)	15 mg/kg
5.7	Sum of copper, zinc and iron	20 mg/kg
5.8	Mineral impurities insoluble in 10% of hydrochloric acid shall not exceed 25 mg/kg (only for clarified juices)	
5.9	Toxins	
5.9.1	Mycotoxins	
5.9.1.1	Patulin (in apple juice and apple juice ingredients)	50µg/kg

5.3 PESTICIDE RESIDUES

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for the respective fruits.

6. HYGIENE

6.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3-1997), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

6.2 The products should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997).

7. LABELLING

In addition to the General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985, Rev. 2-1999) the following specific provisions apply:

7.1 CONTAINERS DESTINED FOR THE FINAL CONSUMER

7.1.1 The Name of the Food

7.1.1.1 Fruit Juice

The food name of the product shall be the name of the fruit juice used as defined in Section 2.2. Such food name may only be used for juices conforming to the definition in Section 2.1.1 of this standard and which otherwise conform to this standard.

7.1.1.2 Concentrated Fruit Juice

The food name of the product is “concentrated _____ juice or _____ juice concentrate”, the blank being filled with the species for the applicable name of the fruit juice used as defined in Section 2.2. Such food name may only be used for juices conforming to the definition in Section 2.1.2 of this standard and which otherwise conform to this standard.

7.1.1.3 Nectar

The food name of this product shall be "___ Nectar" or "Nectar of ____" the blank being filled with the species of the applicable fruit juice or fruit purée ingredients in Section 2.2.

7.1.2 Additional Requirements

The following additional specific provisions shall apply:

7.1.2.1 For fruit juices, if the product contains or is prepared from concentrated juice and water or the product is prepared from juice from concentrate and juice, the words “from concentrate” must be entered close to the product name, standing out well from any background, in clearly visible characters.

7.1.2.2 For fruit juices, if the product is prepared by physically removing at least 50% of the water from the fruit juice, it must be labeled "concentrated" juice.

7.1.2.3 For fruit juice products defined in Section 2.1, where one or more of the optional sugars as defined by the Codex General Standards for sugar are added or permitted sweeteners are added, the juice name shall include the statement called "sugars added " or "sweetened" in conjunction with the food name.

7.1.2.4 Where concentrated fruit juice or concentrated nectar is to be reconstituted before consumption as fruit juice or nectar, the label shall bear appropriate directions for reconstitution on a volume/volume basis with water at a minimum in accordance with the applicable single strength Brix value in Section 3.1.1(b).

7.1.2.5 Distinct varietal denominations may be used in conjunction with the common fruit names on the label.

7.1.2.6 Fruit juice and nectar that have been preserved using physical processes may include a description of such process as part of the food name (i.e. "pasteurised," "frozen," etc.)

7.1.2.7 Fruit nectars shall be conspicuously labelled with a declaration of "fruit content __%" with the blank being filled with the percentage of puree and/ or fruit juice computed on a volume/volume basis. The words "fruit content __%" shall appear in close proximity to the name of the food.

7.2 Non-Retail Containers

Information for non-retail containers not destined to final consumers shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name and address of the manufacturers packers or distributors, as well as storage instructions, shall appear on the container. However, lot identification, and the name and address of the manufacturer, packer or distributor may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING[3]

[3] (a) **Table I** contains the methods of analysis for fruit juices, concentrated fruit juices and fruit nectars preserved exclusively by physical means set forth in Volume 6 – Fruit Juices and Related Products - of the Codex Alimentarius Commission.
(b) **Table II** contains the methods of analysis and sampling proposed for addition by the International Fruit Juice Producers to the current draft.

TABLE I

Commodity Standard	*Provision*	*Method*	*Principle*	*Type*
Fruit Juices				
Fruit juices	Arsenic	AOAC 952.13 (Codex General method)	Colorimetry (diethyldithiocarbamate)	II
Fruit juices	Arsenic	AOAC 942.17 (Codex General method)	Colorimetry (molybdenum blue)	III
Fruit juices	Arsenic	AOAC 986.15 (Codex General method)	Atomic absorption spectrophotometry	III
Fruit juices	Ascorbic acid, L-	AOAC 967.22	Microfluorometry	II
Fruit juices	Carbon dioxide	IFJU Method No 42, 1976	Titrimetry (back-titration after precipitation)	IV
Fruit juices	Copper	AOAC 971.20 (Codex general method)	Atomic absorption spectrophotometry	II
Fruit juices	Essential oils	AOAC 944.06; 942.08	Babcock method	I
Fruit juices	Essential oils (Citrus fruit juices)	IFJU Method No. 45A, 1972	Distillation and titration	I
Fruit juices	Expression of results as m/m	IFJU Method No 1, 1989 & IFJU General sheet, 1971	Pycnometry	I
Fruit juices	Fermentability, test of	IFJU Method No 18, 1974	Microbiological method	I
Fruit juices	Fill of containers	CAC/RM 46-1972	Weighing	I
Fruit juices	Iron	IFJU Method No 15, 1964	Photometry	II
Fruit juices	Lead	AOAC 972.25 (Codex general method)	Atomic absorption spectrophotometry	II
Fruit juices	Mineral impurities insoluble in HCl	AOAC 941.12C	Gooch filtration	I
Fruit juices	Salt, added	AOAC 971.27 (Codex general method)	Potentiometry	II
Fruit juices	Salt, added	IFJU Method No 37, 1968	Electrochemical titrimetry	III
Fruit juices	Sampling	IFJU Method No 1, 1989	-	-
Fruit juices	Soluble solids	IFJU Method No 8B, 1968	Refractometry	I
Fruit juices	Sugars	IFJU Method No 4, 1985	Titrimetry	I
Fruit juices	Sulphur dioxide	IFJU Method No 7, 1968	Titrimetry after distillation	II
Fruit juices	Tin	AOAC 980.19 (Codex general method)	Atomic absorption spectrophotometry	II
Fruit juices	Titratable acids, total	IFJU Method No 3, 1968	Titrimetry	I
Fruit juices	Viscosity, apparent	AOAC 967.16	Capillary viscometry	I
Fruit juices	Volatile acids	IFJU Method No 5, 1985	Titrimetry after distillation	I
Fruit juices	Zinc	AOAC 969.32 (Codex general method)	Atomic absorption spectrophotometry	II
Fruit juices	Zinc	AOAC 986.15 (Codex general method)	Anodic stripping voltammetry	III

TABLE II

IFU N°	Method	Year	Principle
3	Ttitratable acids	1996	Potentiometric titration
7/7a	Total sulphur dioxide	1968	Distillation/titration
8	Soluble solids	1991	Indirect by refractometry
9	Ash	1962/1989	Gravimetry
11	pH-value	1968/1989	Potentiometrically
17a	L-ascorbic acid	1995	HPLC
21	L-malic acid, enzym.	1985	Enzymatic determination
22	Citric acid, enzym.	1985	Enzymatic determination
26	Pectin	1964/1996	Precipitation/photometry
28	Total nitrogen	1991	Digestion/titration
30	Formol number	1984	Potentiometric titration
33	Sodium, potassium, calcium, magnesium	1984	AAS
36	Sulphates	1987	Precipitation/gravimetry
37	Chloride	1991	Potentiometric titration
49	Proline	1983	Photometric determination
52	Alcohol enzym.	1983/1996	Enzymatic determination
53	Lactic acid, enzym.	1983/1996	Enzymatic determination
54	D-isocitric acid, enzym.	1984	Enzymatic determination
55	Glucose + fructose, enzym.	1985	Enzymatic determination
56	Sucrose enzym.	1985/1998	Enzymatic determination
57	Free amino acids	1989	Chromatography
58	Hesperidin + Naringin HPLC	1991	HPLC
59	Total carotenoids + individual carotenoid groups	1991	Precipitation/fractionation
60	Centrifugable pulp	1991/1998	Centrifugation/% value
61	Total dry matter	1991	
62	D-sorbitol, enzym.	1995	Enzymatic determination
63	Preservatives (HPLC)	1995	HPLC
64	D-malic acid, enzym.	1995	Enzymatic determination
65	Tartric acid in grape juice (HPLC)	1995	HPLC
66	Acetic acid, enzym.	1996	Enzymatic determination
67	Sugars and sorbitol HPLC	1996	HPLC
69	Hydroxymethylfurfural (HPLC)	1996	HPLC
70	Cell content of pulps and juices	1998	
71	Anthocyanins by HPLC	1998	HPLC
72	Fumaric acid	1998	HPLC